

WO 00/06730

PCT/US99/17167

SEQUENCE LISTING

<110> INCYTE PHARMACEUTICALS, INC.

BANDMAN, Olga
 TANG, Y. Tom
 YUE, Henry
 CORLEY, Neil C.
 GUEGLER, Karl J.
 AZIMZAI, Yalda
 PATTERSON, Chandra
 LAL, Preeti
 BAUGHN, Mariah R.

<120> HUMAN CYTOSKELETAL PROTEINS

<130> PF-0568 PCT

<140> To Be Assigned

<141> Herewith

<150> 09/127,665

<151> 1998-07-31

<160> 17

<170> PERL Program

<210> 1

<211> 284

<212> PRT

<213> Homo sapiens

<220>

<221> misc_feature

<223> Incyte Clone No: 1274060

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Met	Glu	Ala	Ile	Lys	Lys	Lys	Met	Gln	Met	Leu	Lys	Leu	Asp	Lys
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Glu	Asn	Ala	Ile	Asp	Arg	Ala	Glu	Gln	Ala	Glu	Ala	Asp	Lys	Lys
				20					25					30
Ala	Ala	Glu	Asp	Lys	Cys	Lys	Gln	Val	Glu	Glu	Glu	Leu	Thr	His
				35					40					45
Leu	Gln	Lys	Lys	Leu	Lys	Gly	Thr	Glu	Asp	Glu	Leu	Asp	Lys	Tyr
				50					55					60
Ser	Glu	Asp	Leu	Lys	Asp	Ala	Gln	Glu	Lys	Leu	Glu	Leu	Thr	Glu
				65					70					75
Lys	Lys	Ala	Ser	Asp	Ala	Glu	Gly	Asp	Val	Ala	Ala	Leu	Asn	Arg
				80					85					90
Arg	Ile	Gln	Leu	Val	Glu	Glu	Glu	Leu	Asp	Arg	Ala	Gln	Glu	Arg
				95					100					105
Leu	Ala	Thr	Ala	Leu	Gln	Lys	Leu	Glu	Glu	Ala	Glu	Lys	Ala	Ala
				110					115					120
Asp	Glu	Ser	Glu	Arg	Gly	Met	Lys	Val	Ile	Glu	Asn	Arg	Ala	Met
				125					130					135
Lys	Asp	Glu	Glu	Lys	Met	Glu	Ile	Gln	Glu	Met	Gln	Leu	Lys	Glu
				140					145					150
Ala	Lys	His	Ile	Ala	Glu	Glu	Ala	Asp	Arg	Lys	Tyr	Glu	Glu	Val
				155					160					165
Ala	Arg	Lys	Leu	Val	Ile	Leu	Glu	Gly	Glu	Leu	Glu	Arg	Ala	Glu
				170					175					180
Glu	Arg	Ala	Glu	Val	Ser	Glu	Leu	Lys	Cys	Gly	Asp	Leu	Glu	Glu
				185					190					195

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Glu	Leu	Lys	Asn	Val	Thr	Asn	Asn	Leu	Lys	Ser	Leu	Glu	Ala	Ala	
				200					205						210
Ser	Glu	Lys	Tyr	Ser	Glu	Lys	Glu	Asp	Lys	Tyr	Glu	Glu	Glu	Ile	
				215					220						225
Lys	Leu	Leu	Ser	Asp	Lys	Leu	Lys	Glu	Ala	Glu	Thr	Arg	Ala	Glu	
				230					235						240
Phe	Ala	Glu	Arg	Thr	Val	Ala	Lys	Leu	Glu	Lys	Thr	Ile	Asp	Asp	
				245					250						255
Leu	Glu	Glu	Lys	Leu	Ala	Gln	Ala	Lys	Glu	Glu	Asn	Val	Gly	Leu	
				260					265						270
His	Gln	Thr	Leu	Asp	Gln	Thr	Leu	Asn	Glu	Leu	Asn	Cys	Ile		
				275					280						

<210> 2
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 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Incyte Clone No: 1577078

<400> 2

Met	Lys	Val	Ile	Glu	Asn	Arg	Ala	Met	Lys	Asp	Glu	Glu	Lys	Met	
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Glu	Ile	Gln	Glu	Met	Gln	Leu	Lys	Glu	Ala	Lys	His	Ile	Ala	Glu	
				20					25					30	
Glu	Ala	Asp	Arg	Lys	Tyr	Glu	Glu	Val	Ala	Arg	Lys	Leu	Val	Ile	
				35					40					45	
Leu	Glu	Gly	Glu	Leu	Glu	Arg	Ala	Glu	Glu	Arg	Ala	Glu	Val	Ser	
				50					55					60	
Glu	Leu	Lys	Cys	Gly	Asp	Leu	Glu	Glu	Glu	Leu	Lys	Asn	Val	Thr	
				65					70					75	
Asn	Asn	Leu	Lys	Ser	Leu	Glu	Ala	Ala	Ser	Glu	Lys	Tyr	Ser	Glu	
				80					85					90	
Lys	Glu	Asp	Lys	Tyr	Glu	Glu	Glu	Ile	Lys	Leu	Leu	Ser	Asp	Lys	
				95					100					105	
Leu	Lys	Glu	Ala	Glu	Thr	Arg	Ala	Glu	Phe	Ala	Glu	Arg	Thr	Val	
				110					115					120	
Ala	Lys	Leu	Glu	Lys	Thr	Ile	Asp	Asp	Leu	Glu	Glu	Lys	Leu	Ala	
				125					130					135	
Gln	Ala	Lys	Glu	Glu	Asn	Val	Gly	Leu	His	Gln	Thr	Leu	Asp	Gln	
				140					145					150	
Thr	Leu	Asn	Glu	Leu	Asn	Cys	Ile								
				155											

<210> 3
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 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Incyte Clone No: 1426711

<400> 3

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Met Asp Ala Ile Lys Lys Lys Met Gln Met Leu Lys Leu Asp Lys
 1          5          10          15
Glu Asn Ala Leu Asp Arg Ala Glu Gln Ala Glu Ala Asp Lys Lys
          20          25          30
Ala Ala Glu Asp Arg Ser Lys Gln Leu Glu Glu Asp Ile Ala Ala
          35          40          45
Lys Glu Lys Leu Leu Arg Val Ser Glu Asp Glu Arg Asp Arg Val
          50          55          60
Leu Glu Glu Leu His Lys Ala Glu Asp Ser Leu Leu Ala Ala Glu
          65          70          75
Glu Ala Ala Ala Lys Ala Glu Ala Asp Val Ala Ser Leu Asn Arg
          80          85          90
Arg Ile Gln Leu Val Glu Glu Glu Leu Asp Arg Ala Gln Glu Arg
          95          100          105
Leu Ala Thr Ala Leu Gln Lys Leu Glu Glu Ala Glu Lys Ala Ala
          110          115          120
Asp Glu Ser Glu Arg Gly Met Lys Val Ile Glu Ser Arg Ala Gln
          125          130          135
Lys Asp Glu Glu Lys Met Glu Ile Gln Glu Ile Gln Leu Lys Glu
          140          145          150
Ala Lys His Ile Ala Glu Asp Ala Asp Arg Lys Tyr Glu Glu Val
          155          160          165
Ala Arg Lys Leu Val Ile Ile Glu Ser Asp Leu Glu Arg Ala Glu
          170          175          180
Glu Arg Ala Gly Glu Gly Leu Asp Lys Asp Arg Arg Ala Ala Thr
          185          190          195
His His Pro Ser Pro His Pro His Pro Leu Leu Glu Phe
          200          205

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<210> 4

<211> 156

<212> PRT

<213> Homo sapiens

<220>

<221> misc_feature

<223> Incyte Clone No: 1676756

<400> 4

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Met Ile Lys Arg Val Leu Leu Glu Arg Leu Glu Asn Thr Arg Lys
 1          5          10          15
Leu Arg Glu Leu Thr Glu Gly Arg Thr Leu Asp Trp Pro Gln Asn
          20          25          30
Arg Ile Thr Glu Val Ser Ala Lys Arg Gln Ile Val Thr Glu Tyr
          35          40          45
Arg Glu Lys Gly Lys Arg Asn Tyr Glu Glu Lys Lys Arg Asp Leu
          50          55          60
Glu Gly Arg Ser Arg Arg Tyr Asn Leu Cys Ile Ile Gly Ile Pro
          65          70          75
Glu Thr Glu Asp Arg Ala Ser Gly Ala Glu Thr Ile Lys Asp Leu
          80          85          90
Leu Glu Lys Asn Phe Pro Glu Leu Lys Asn Glu Leu Asp Leu Gln
          95          100          105
Met Glu Lys Ala His Arg Ile Pro Leu Lys Phe Asn Glu Lys Lys
          110          115          120
Ala Ala Ser Arg His Ile Arg Val Thr Phe Leu Asn Phe Lys Asp
          125          130          135
Glu Thr Phe Tyr Lys His Pro Val Arg Glu Ser Arg Leu Leu Thr
          140          145          150
Lys Gly Gln Lys Ser Gly
          155

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<210> 5
 <211> 876
 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Incyte Clone No: 1843770

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 Met Ala Ser Asp Ala Ser His Ala Leu Glu Ala Ala Leu Glu Gln
 1 5 10 15
 Met Asp Gly Ile Ile Ala Gly Thr Lys Thr Gly Ala Asp Leu Ser
 20 25 30
 Asp Gly Thr Cys Glu Pro Gly Leu Ala Ser Pro Ala Ser Tyr Met
 35 40 45
 Asn Pro Phe Pro Val Leu His Leu Ile Glu Asp Leu Arg Leu Ala
 50 55 60
 Leu Glu Met Leu Glu Leu Pro Gln Glu Arg Ala Ala Leu Leu Ser
 65 70 75
 Gln Ile Pro Gly Pro Thr Ala Ala Tyr Ile Lys Glu Trp Phe Glu
 80 85 90
 Glu Ser Leu Ser Gln Val Asn His His Ser Ala Ala Ser Asn Glu
 95 100 105
 Thr Tyr Gln Glu Arg Leu Ala Arg Leu Glu Gly Asp Lys Glu Ser
 110 115 120
 Leu Ile Leu Gln Val Ser Val Leu Thr Asp Gln Val Glu Ala Gln
 125 130 135
 Gly Glu Lys Ile Arg Asp Leu Glu Val Cys Leu Glu Gly His Gln
 140 145 150
 Val Lys Leu Asn Ala Ala Glu Glu Met Leu Gln Gln Glu Leu Leu
 155 160 165
 Ser Arg Thr Ser Leu Glu Thr Gln Lys Leu Asp Leu Met Thr Glu
 170 175 180
 Val Ser Glu Leu Lys Leu Lys Leu Val Gly Met Glu Lys Glu Gln
 185 190 195
 Arg Glu Gln Glu Glu Lys Gln Arg Lys Ala Glu Glu Leu Leu Gln
 200 205 210
 Glu Leu Arg His Leu Lys Ile Lys Val Glu Glu Leu Glu Asn Glu
 215 220 225
 Arg Asn Gln Tyr Glu Trp Lys Leu Lys Ala Thr Lys Ala Glu Val
 230 235 240
 Ala Gln Leu Gln Glu Gln Val Ala Leu Lys Asp Ala Glu Ile Glu
 245 250 255
 Arg Leu His Ser Gln Leu Ser Arg Thr Ala Ala Leu His Ser Glu
 260 265 270
 Ser His Thr Glu Arg Asp Gln Glu Ile Gln Arg Leu Lys Met Gly
 275 280 285
 Met Glu Thr Leu Leu Leu Ala Asn Glu Asp Lys Asp Arg Arg Ile
 290 295 300
 Glu Glu Leu Thr Gly Leu Leu Asn Gln Tyr Arg Lys Val Lys Glu
 305 310 315
 Ile Val Met Val Thr Gln Gly Pro Ser Glu Arg Thr Leu Ser Ile
 320 325 330
 Asn Glu Glu Glu Pro Glu Gly Gly Phe Ser Lys Trp Asn Ala Thr
 335 340 345
 Asn Lys Asp Pro Glu Glu Leu Phe Lys Gln Glu Met Pro Pro Arg
 350 355 360
 Cys Ser Ser Pro Thr Val Gly Pro Pro Pro Leu Pro Gln Lys Ser
 365 370 375
 Leu Glu Thr Arg Ala Gln Lys Lys Leu Ser Cys Ser Leu Glu Asp
 380 385 390
 Leu Arg Ser Glu Ser Val Asp Lys Cys Met Asp Gly Asn Gln Pro
 395 400 405

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Phe	Pro	Val	Leu	Glu	Pro	Lys	Asp	Ser	Pro	Phe	Leu	Ala	Glu	His
				410					415					420
Lys	Tyr	Pro	Thr	Leu	Pro	Gly	Lys	Leu	Ser	Gly	Ala	Thr	Pro	Asn
				425					430					435
Gly	Glu	Ala	Ala	Lys	Ser	Pro	Pro	Thr	Ile	Cys	Gln	Pro	Asp	Ala
				440					445					450
Thr	Gly	Ser	Ser	Leu	Leu	Arg	Leu	Arg	Asp	Thr	Glu	Ser	Gly	Trp
				455					460					465
Asp	Asp	Thr	Ala	Val	Val	Asn	Asp	Leu	Ser	Ser	Thr	Ser	Ser	Gly
				470					475					480
Thr	Glu	Ser	Gly	Pro	Gln	Ser	Pro	Leu	Thr	Pro	Asp	Gly	Lys	Arg
				485					490					495
Asn	Pro	Lys	Gly	Ile	Lys	Lys	Phe	Trp	Gly	Lys	Ile	Arg	Arg	Thr
				500					505					510
Gln	Ser	Gly	Asn	Phe	Tyr	Thr	Asp	Thr	Leu	Gly	Met	Ala	Glu	Phe
				515					520					525
Arg	Arg	Gly	Gly	Leu	Arg	Ala	Thr	Ala	Gly	Pro	Arg	Leu	Ser	Arg
				530					535					540
Thr	Arg	Asp	Ser	Lys	Gly	Gln	Lys	Ser	Asp	Ala	Asn	Ala	Pro	Phe
				545					550					555
Ala	Gln	Trp	Ser	Thr	Glu	Arg	Val	Cys	Ala	Trp	Leu	Glu	Asp	Phe
				560					565					570
Gly	Leu	Ala	Gln	Tyr	Val	Ile	Phe	Ala	Arg	Gln	Trp	Val	Ser	Ser
				575					580					585
Gly	His	Thr	Leu	Leu	Thr	Ala	Thr	Pro	Gln	Asp	Met	Glu	Lys	Glu
				590					595					600
Leu	Gly	Ile	Lys	His	Pro	Leu	His	Arg	Lys	Lys	Leu	Val	Leu	Ala
				605					610					615
Val	Lys	Ala	Ile	Asn	Thr	Lys	Gln	Glu	Glu	Lys	Ser	Ala	Leu	Leu
				620					625					630
Asp	His	Ile	Trp	Val	Thr	Arg	Trp	Leu	Asp	Asp	Ile	Gly	Leu	Pro
				635					640					645
Gln	Tyr	Lys	Asp	Gln	Phe	His	Glu	Ser	Arg	Val	Asp	Gly	Arg	Met
				650					655					660
Leu	Gln	Tyr	Leu	Thr	Val	Asn	Asp	Leu	Leu	Phe	Leu	Lys	Val	Thr
				665					670					675
Ser	Gln	Leu	His	His	Leu	Ser	Ile	Lys	Cys	Ala	Ile	His	Val	Leu
				680					685					690
His	Val	Asn	Lys	Phe	Asn	Pro	His	Cys	Leu	His	Arg	Arg	Pro	Ala
				695					700					705
Asp	Glu	Ser	Asn	Leu	Ser	Pro	Ser	Glu	Val	Val	Gln	Trp	Ser	Asn
				710					715					720
His	Arg	Val	Met	Glu	Trp	Leu	Arg	Ser	Val	Asp	Leu	Ala	Glu	Tyr
				725					730					735
Ala	Pro	Asn	Leu	Arg	Gly	Ser	Gly	Val	His	Gly	Gly	Leu	Ile	Ile
				740					745					750
Leu	Glu	Pro	Arg	Phe	Thr	Gly	Asp	Thr	Leu	Ala	Met	Leu	Leu	Asn
				755					760					765
Ile	Pro	Pro	Gln	Lys	Thr	Leu	Leu	Arg	Arg	His	Leu	Thr	Thr	Lys
				770					775					780
Phe	Asn	Ala	Leu	Ile	Gly	Pro	Glu	Ala	Glu	Gln	Glu	Lys	Arg	Glu
				785					790					795
Lys	Met	Ala	Ser	Pro	Ala	Tyr	Thr	Pro	Leu	Thr	Thr	Thr	Ala	Lys
				800					805					810
Val	Arg	Pro	Arg	Lys	Leu	Gly	Phe	Ser	His	Phe	Gly	Asn	Ile	Arg
				815					820					825
Lys	Lys	Lys	Phe	Asp	Glu	Ser	Thr	Asp	Tyr	Ile	Cys	Pro	Met	Glu
				830					835					840
Pro	Ser	Asp	Gly	Val	Ser	Asp	Ser	His	Arg	Val	Tyr	Ser	Gly	Tyr
				845					850					855
Arg	Gly	Leu	Ser	Pro	Leu	Asp	Ala	Pro	Glu	Leu	Asp	Gly	Leu	Asp
				860					865					870
Gln	Val	Gly	Gln	Ile	Ser									
				875										

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<210> 6
 <211> 806
 <212> PRT
 <213> Homo sapiens

<220>
 <221> misc_feature
 <223> Incyte Clone No: 3768043

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 Met Glu Glu Pro Gly Ala Thr Pro Gln Pro Tyr Leu Gly Leu Val
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 Leu Glu Glu Leu Arg Arg Val Val Ala Ala Leu Pro Glu Ser Met
 20 25 30
 Arg Pro Asp Glu Asn Pro Tyr Gly Phe Pro Ser Glu Leu Val Val
 35 40 45
 Cys Ala Ala Val Ile Gly Phe Phe Val Val Leu Leu Phe Leu Trp
 50 55 60
 Arg Ser Phe Arg Ser Val Arg Ser Arg Leu Tyr Val Gly Arg Glu
 65 70 75
 Gln Lys Leu Gly Ala Thr Leu Ser Gly Leu Ile Glu Glu Lys Cys
 80 85 90
 Lys Leu Leu Glu Lys Phe Ser Leu Ile Gln Lys Glu Tyr Glu Gly
 95 100 105
 Tyr Glu Val Glu Ser Ser Leu Glu Asp Ala Ser Phe Glu Lys Glu
 110 115 120
 Ala Ala Glu Glu Ala Arg Ser Leu Glu Ala Thr Cys Glu Lys Leu
 125 130 135
 Asn Arg Ser Asn Ser Glu Leu Glu Asp Glu Ile Leu Cys Leu Glu
 140 145 150
 Lys Asp Leu Lys Gln Glu Lys Ser Lys His Ser Gln Gln Asp Glu
 155 160 165
 Leu Met Ala Asp Ile Ser Lys Ser Ile Gln Ser Leu Glu Asp Glu
 170 175 180
 Ser Lys Ser Leu Lys Ser Gln Ile Ala Glu Ala Lys Ile Ile Cys
 185 190 195
 Lys Thr Phe Lys Met Ser Glu Glu Arg Arg Ala Ile Ala Ile Lys
 200 205 210
 Asp Ala Leu Asn Glu Asn Ser Gln Leu Gln Thr Ser His Lys Gln
 215 220 225
 Leu Phe Gln Gln Glu Ala Glu Val Trp Lys Gly Glu Val Ser Glu
 230 235 240
 Leu Asn Lys Gln Lys Ile Thr Phe Glu Asp Ser Lys Val His Ala
 245 250 255
 Glu Gln Val Leu Asn Asp Lys Glu Asn His Ile Lys Thr Leu Thr
 260 265 270
 Gly His Leu Pro Met Met Lys Asp Gln Ala Ala Val Leu Glu Glu
 275 280 285
 Asp Thr Thr Asp Asp Asp Asn Leu Glu Leu Glu Val Asn Ser Glu
 290 295 300
 Ser Glu Asn Gly Ala Tyr Leu Asp Asn Pro Pro Lys Gly Ala Leu
 305 310 315
 Lys Lys Leu Ile His Ala Ala Lys Leu Asn Ala Ser Leu Lys Thr
 320 325 330
 Leu Glu Gly Glu Arg Asn Gln Ile Tyr Ile Gln Leu Ser Glu Val
 335 340 345
 Asp Lys Thr Lys Glu Glu Leu Thr Glu His Ile Lys Asn Leu Gln
 350 355 360
 Thr Gln Gln Ala Ser Leu Gln Ser Glu Asn Thr His Phe Glu Asn
 365 370 375
 Glu Asn Gln Lys Leu Gln Gln Lys Leu Lys Val Met Thr Glu Leu
 380 385 390

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<220>
 <221> misc feature
 <223> Incyte Clone No: 1655208

<400> 7
 Met Glu Thr Arg Ser Pro Gly Leu Asn Asn Met Lys Pro Gln Ser
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 20 25 30
 Met Ala Glu Asn Gln Ala Ala Ser Trp Arg Lys Leu Lys Asn Ser
 35 40 45
 Gln Glu Ala Gln Gln Arg Gln Ala Thr Leu Val Arg Lys Leu Gln
 50 55 60
 Ala Lys Val Leu Gln Tyr Arg Ser Trp Cys Gln Glu Leu Glu Lys
 65 70 75
 Arg Leu Glu Ala Thr Gly Gly Pro Ile Pro Gln Arg Trp Glu Asn
 80 85 90
 Val Glu Glu Pro Asn Leu Asp Glu Leu Leu Val Arg Leu Glu Glu
 95 100 105
 Glu Gln Gln Arg Cys Glu Ser Leu Ala Glu Val Asn Thr Gln Ile
 110 115 120
 Arg Leu His Met Glu Lys Ala Asp Val Val Asn Lys Ala Leu Arg
 125 130 135
 Ala Asp Val Glu Lys Leu Thr Val Asp Trp Ser Arg Ala Arg Asp
 140 145 150
 Glu Leu Met Arg Lys Glu Ser Gln Trp Gln Met Glu Gln Glu Phe
 155 160 165
 Phe Lys Gly Tyr Leu Lys Gly Glu His Gly Arg Leu Leu Ser Leu
 170 175 180
 Trp Arg Glu Val Val Thr Phe Arg Arg His Phe Leu Glu Met Lys
 185 190 195
 Ser Ala Thr Asp Arg Asp Leu Met Glu Leu Lys Ala Glu His Val
 200 205 210
 Arg Leu Ser Gly Ser Leu Leu Thr Cys Cys Leu Arg Leu Thr Val
 215 220 225
 Gly Ala Gln Ser Arg Glu Pro Asn Gly Ser Gly Arg Met Asp Gly
 230 235 240
 Arg Glu Pro Ala Gln Leu Leu Leu Leu Leu Ala Lys Thr Gln Glu
 245 250 255
 Leu Glu Lys Glu Ala His Glu Arg Ser Gln Glu Leu Ile Gln Leu
 260 265 270
 Lys Ser Gln Gly Asp Leu Glu Lys Ala Glu Leu Gln Asp Arg Val
 275 280 285
 Thr Glu Leu Ser Ala Leu Leu Thr Gln Ser Gln Lys Gln Asn Glu
 290 295 300
 Asp Tyr Glu Lys Met Ile Lys Ala Leu Arg Glu Thr Val Glu Ile
 305 310 315
 Leu Glu Thr Asn His Thr Glu Leu Met Glu His Glu Ala Ser Leu
 320 325 330
 Ser Arg Asn Ala Gln Glu Glu Lys Leu Ser Leu Gln Gln Val Ile
 335 340 345
 Lys Asp Ile Thr Gln Val Met Val Glu Glu Gly Asp Asn Ile Ala
 350 355 360
 Gln Gly Ser Gly Leu Glu Asn Ser Leu Glu Leu Glu Ser Ser Ile
 365 370 375
 Phe Ser Gln Phe Asp Tyr Gln Asp Ala Asp Lys Ala Leu Thr Leu
 380 385 390
 Val Arg Ser Val Leu Thr Arg Arg Arg Gln Ala Val Gln Asp Leu
 395 400 405
 Arg Gln Gln Leu Ala Gly Cys Gln Glu Ala Val Asn Leu Leu Gln
 410 415 420
 Gln Gln His Asp Gln Trp Glu Glu Glu Gly Lys Ala Leu Arg Gln
 425 430 435
 Arg Leu Gln Lys Leu Thr Gly Glu Arg Asp Thr Leu Ala Gly Gln
 440 445 450

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Thr	Val	Asp	Leu	Gln	Gly	Glu	Val	Asp	Ser	Leu	Ser	Lys	Glu	Arg
				455					460					465
Glu	Leu	Leu	Gln	Lys	Ala	Arg	Glu	Glu	Leu	Arg	Gln	Gln	Leu	Glu
				470					475					480
Val	Leu	Glu	Gln	Glu	Ala	Trp	Arg	Leu	Arg	Arg	Val	Asn	Val	Glu
				485					490					495
Leu	Gln	Leu	Gln	Gly	Asp	Ser	Ala	Gln	Gly	Gln	Lys	Glu	Glu	Gln
				500					505					510
Gln	Glu	Glu	Leu	His	Leu	Ala	Val	Arg	Glu	Arg	Glu	Arg	Leu	Gln
				515					520					525
Glu	Met	Leu	Met	Gly	Leu	Glu	Ala	Lys	Gln	Ser	Glu	Ser	Leu	Ser
				530					535					540
Glu	Leu	Ile	Thr	Leu	Arg	Glu	Ala	Leu	Glu	Ser	Ile	His	Leu	Glu
				545					550					555
Gly	Glu	Leu	Leu	Arg	Gln	Glu	Gln	Thr	Glu	Val	Thr	Ala	Ala	Leu
				560					565					570
Ala	Arg	Ala	Glu	Gln	Ser	Ile	Ala	Glu	Leu	Ser	Ser	Ser	Glu	Asn
				575					580					585
Thr	Leu	Lys	Thr	Glu	Val	Ala	Asp	Leu	Arg	Ala	Ala	Ala	Val	Lys
				590					595					600
Leu	Ser	Ala	Leu	Asn	Glu	Ala	Leu	Ala	Leu	Asp	Lys	Val	Gly	Leu
				605					610					615
Asn	Gln	Gln	Leu	Leu	Gln	Leu	Glu	Glu	Glu	Asn	Gln	Ser	Val	Cys
				620					625					630
Ser	Arg	Met	Glu	Ala	Ala	Glu	Gln	Ala	Arg	Asn	Ala	Leu	Gln	Val
				635					640					645
Asp	Leu	Ala	Glu	Ala	Glu	Lys	Arg	Arg	Glu	Ala	Leu	Trp	Glu	Lys
				650					655					660
Asn	Thr	His	Leu	Glu	Ala	Gln	Leu	Gln	Lys	Ala	Glu	Glu	Ala	Gly
				665					670					675
Ala	Glu	Leu	Gln	Ala	Asp	Leu	Arg	Asp	Ile	Gln	Glu	Glu	Lys	Glu
				680					685					690
Glu	Ile	Gln	Lys	Lys	Leu	Ser	Glu	Ser	Arg	His	Gln	Gln	Glu	Ala
				695					700					705
Ala	Thr	Thr	Gln	Leu	Glu	Gln	Leu	His	Gln	Glu	Ala	Lys	Arg	Gln
				710					715					720
Glu	Glu	Val	Leu	Ala	Arg	Ala	Val	Gln	Glu	Lys	Glu	Ala	Leu	Val
				725					730					735
Arg	Glu	Lys	Ala	Ala	Leu	Glu	Val	Arg	Leu	Gln	Ala	Val	Glu	Arg
				740					745					750
Asp	Arg	Gln	Asp	Leu	Ala	Ala	Gln	Leu	Gln	Gly	Leu	Ser	Ser	Ala
				755					760					765
Lys	Glu	Leu	Leu	Glu	Ser	Ser	Leu	Phe	Glu	Ala	Gln	Gln	Gln	Asn
				770					775					780
Ser	Val	Ile	Asp	Glu	Pro	Gln	Gly	Gln	Leu	Glu	Val	Gln	Ile	Gln
				785					790					795
Thr	Val	Thr	Gln	Ala	Lys	Glu	Val	Ile	Gln	Gly	Glu	Val	Arg	Cys
				800					805					810
Leu	Lys	Leu	Glu	Leu	Asp	Thr	Glu	Arg	Ser	Gln	Ala	Glu	Gln	Glu
				815					820					825
Arg	Asp	Ala	Ala	Ala	Arg	Gln	Leu	Ala	Gln	Ala	Glu	Gln	Glu	Gly
				830					835					840
Lys	Thr	Ala	Leu	Glu	Gln	Gln	Lys	Ala	Ala	His	Glu	Lys	Glu	Val
				845					850					855
Asn	Gln	Leu	Arg	Glu	Lys	Trp	Glu	Lys	Glu	Arg	Ser	Trp	His	Gln
				860					865					870
Gln	Glu	Leu	Ala	Lys	Ala	Leu	Glu	Ser	Leu	Glu	Arg	Glu	Lys	Met
				875					880					885
Glu	Leu	Glu	Met	Arg	Leu	Lys	Glu	Gln	Gln	Thr	Glu	Met	Glu	Ala
				890					895					900
Ile	Gln	Ala	Gln	Arg	Glu	Glu	Glu	Arg	Thr	Gln	Ala	Glu	Ser	Ala
				905					910					915
Leu	Cys	Gln	Met	Gln	Leu	Glu	Thr	Glu	Lys	Glu	Arg	Val	Ser	Leu
				920					925					930
Leu	Glu	Thr	Leu	Leu	Gln	Thr	Gln	Lys	Glu	Leu	Ala	Asp	Ala	Ser

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Gln Gln Leu Glu Arg	935	Leu Arg Gln Asp Met	940	Lys Val Gln Lys Leu	945
Lys Glu Gln Glu Thr	950	Thr Gly Ile Leu Gln	955	Thr Gln Leu Gln Glu	960
Ala Gln Arg Glu Leu	965	Lys Glu Ala Ala Arg	970	Gln His Arg Asp Asp	975
Leu Ala Ala Leu Gln	980	Glu Glu Ser Ser Ser	985	Leu Leu Gln Asp Lys	990
Met Asp Leu Gln Lys	995	Gln Val Glu Asp Leu	1000	Lys Ser Gln Leu Val	1005
Ala Gln Asp Asp Ser	1010	Gln Arg Leu Val Glu	1015	Gln Glu Val Gln Glu	1020
Lys Leu Arg Glu Thr	1025	Gln Glu Tyr Asn Arg	1030	Ile Gln Lys Glu Leu	1035
Glu Arg Glu Lys Ala	1040	Ser Leu Thr Leu Ser	1045	Leu Met Glu Lys Glu	1050
Gln Arg Leu Leu Val	1055	Leu Gln Glu Ala Asp	1060	Ser Ile Arg Gln Gln	1065
Glu Leu Ser Ala Leu	1070	Arg Gln Asp Met Gln	1075	Glu Ala Gln Gly Glu	1080
Gln Lys Glu Leu Ser	1085	Ala Gln Met Glu Leu	1090	Leu Arg Gln Glu Val	1095
Lys Glu Lys Glu Ala	1100	Asp Phe Leu Ala Gln	1105	Glu Ala Gln Leu Leu	1110
Glu Glu Leu Glu Ala	1115	Ser His Ile Thr Glu	1120	Gln Gln Leu Arg Ala	1125
Ser Leu Trp Ala Gln	1130	Glu Ala Lys Ala Ala	1135	Gln Leu His Leu Arg	1140
Leu Arg Ser Thr Glu	1145	Ser Gln Leu Glu Ala	1150	Leu Ala Ala Glu Gln	1155
Gln Pro Gly Asn Gln	1160	Ala Gln Ala Gln Ala	1165	Gln Leu Ala Ser Leu	1170
Tyr Ser Ala Leu Gln	1175	Gln Ala Leu Gly Ser	1180	Val Cys Glu Ser Arg	1185
Pro Glu Leu Ser Gly	1190	Gly Gly Asp Ser Ala	1195	Pro Ser Val Trp Gly	1200
Leu Glu Pro Asp Gln	1205	Asn Gly Ala Arg Ser	1210	Leu Phe Lys Arg Gly	1215
Pro Leu Leu Thr Ala	1220	Leu Ser Ala Glu Ala	1225	Val Ala Ser Ala Leu	1230
Leu Lys Leu His Gln	1235	Asp Leu Trp Lys Thr	1240	Gln Gln Thr Arg Asp	1245
Val Leu Arg Asp Gln	1250	Val Gln Lys Leu Glu	1255	Glu Arg Leu Thr Asp	1260
Thr Glu Ala Glu Lys	1265	Ser Gln Val His Thr	1270	Glu Leu Gln Asp Leu	1275
Gln Arg Gln Leu Ser	1280	Gln Asn Gln Glu Glu	1285	Lys Ser Lys Trp Glu	1290
Gly Lys Gln Asn Ser	1295	Leu Glu Ser Glu Leu	1300	Met Glu Leu His Glu	1305
Thr Met Ala Ser Leu	1310	Gln Ser Arg Leu Arg	1315	Glu Leu His Glu	1320
Arg Met Glu Ala Gln	1325	Gly Glu Arg Glu Leu	1330	Arg Ala Glu Leu Gln	1335
Glu Asn Leu Thr Ala	1340	Gln Val Glu His Leu	1345	Gln Ala Ala Val Val	1350
Glu Ala Arg Ala Gln	1355	Ala Ser Ala Ala Gly	1360	Ile Leu Glu Glu Asp	1365
Leu Arg Thr Ala Arg	1370	Ser Ala Leu Lys Leu	1375	Lys Asn Glu Glu Val	1380
Glu Ser Glu Arg Glu	1385	Arg Ala Gln Ala Leu	1390	Gln Glu Gln Gly Glu	1395
Leu Lys Val Ala Gln	1400	Gly Lys Ala Leu Gln	1405	Glu Asn Leu Ala Leu	1410
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Leu Thr Gln Thr Leu Ala Glu Arg Glu Glu Glu Val Glu Thr Leu	1430	1435	1440
Arg Gly Gln Ile Gln Glu Leu Glu Lys Gln Arg Glu Met Gln Lys	1445	1450	1455
Ala Ala Leu Glu Leu Leu Ser Leu Asp Leu Lys Lys Arg Asn Gln	1460	1465	1470
Glu Val Asp Leu Gln Gln Glu Gln Ile Gln Glu Leu Glu Lys Cys	1475	1480	1485
Arg Ser Val Leu Glu His Leu Pro Met Ala Val Gln Glu Arg Glu	1490	1495	1500
Gln Lys Leu Thr Val Gln Arg Glu Gln Ile Arg Glu Leu Glu Lys	1505	1510	1515
Asp Arg Glu Thr Gln Arg Asn Val Leu Glu His Gln Leu Leu Glu	1520	1525	1530
Leu Glu Lys Lys Asp Gln Met Ile Glu Ser Gln Arg Gly Gln Val	1535	1540	1545
Gln Asp Leu Lys Lys Gln Leu Val Thr Leu Glu Cys Leu Ala Leu	1550	1555	1560
Glu Leu Glu Glu Asn His His Lys Met Glu Cys Gln Gln Lys Leu	1565	1570	1575
Ile Lys Glu Leu Glu Gly Gln Arg Glu Thr Gln Arg Val Ala Leu	1580	1585	1590
Thr His Leu Thr Leu Asp Leu Glu Glu Arg Ser Gln Glu Leu Gln	1595	1600	1605
Ala Gln Ser Ser Gln Ile His Asp Leu Glu Ser His Ser Thr Val	1610	1615	1620
Leu Ala Arg Glu Leu Gln Glu Arg Asp Gln Glu Val Lys Ser Gln	1625	1630	1635
Arg Glu Gln Ile Glu Glu Leu Gln Arg Gln Lys Glu His Leu Thr	1640	1645	1650
Gln Asp Leu Glu Arg Arg Asp Gln Glu Leu Met Leu Gln Lys Glu	1655	1660	1665
Arg Ile Gln Val Leu Glu Asp Gln Arg Thr Arg Gln Thr Lys Ile	1670	1675	1680
Leu Glu Glu Asp Leu Glu Gln Ile Lys Leu Ser Leu Arg Glu Arg	1685	1690	1695
Gly Arg Glu Leu Thr Thr Gln Arg Gln Leu Met Gln Glu Arg Ala	1700	1705	1710
Glu Glu Gly Lys Gly Pro Ser Lys Ala Gln Arg Gly Ser Leu Glu	1715	1720	1725
His Met Lys Leu Ile Leu Arg Asp Lys Glu Lys Glu Val Glu Cys	1730	1735	1740
Gln Gln Glu His Ile His Glu Leu Gln Glu Leu Lys Asp Gln Leu	1745	1750	1755
Glu Gln Gln Leu Gln Gly Leu His Arg Lys Val Gly Glu Thr Ser	1760	1765	1770
Leu Leu Leu Ser Gln Arg Glu Gln Glu Ile Val Val Leu Gln Gln	1775	1780	1785
Gln Leu Gln Glu Ala Arg Glu Gln Gly Glu Leu Lys Glu Gln Ser	1790	1795	1800
Leu Gln Ser Gln Leu Asp Glu Ala Gln Arg Ala Leu Ala Gln Arg	1805	1810	1815
Asp Gln Glu Leu Glu Ala Leu Gln Gln Glu Gln Gln Ala Gln	1820	1825	1830
Gly Gln Glu Glu Arg Val Lys Glu Lys Ala Asp Ala Leu Gln Gly	1835	1840	1845
Ala Leu Glu Gln Ala His Met Thr Leu Lys Glu Arg His Gly Glu	1850	1855	1860
Leu Gln Asp His Lys Glu Gln Ala Arg Arg Leu Glu Glu Glu Leu	1865	1870	1875
Ala Val Glu Gly Arg Arg Val Gln Ala Leu Glu Glu Val Leu Gly	1880	1885	1890
Asp Leu Arg Ala Glu Ser Arg Glu Gln Glu Lys Ala Leu Leu Ala	1895	1900	1905
Leu Gln Gln Gln Cys Ala Glu Gln Ala Gln Glu His Glu Val Glu			

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1910	1915	1920
Thr Arg Ala Leu Gln Asp Ser Trp Leu Gln Ala Gln Ala Val Leu		
1925	1930	1935
Lys Glu Arg Asp Gln Glu Leu Glu Ala Leu Arg Ala Glu Ser Gln		
1940	1945	1950
Ser Ser Arg His Gln Glu Glu Ala Ala Arg Ala Arg Ala Glu Ala		
1955	1960	1965
Leu Gln Glu Ala Leu Gly Lys Ala His Ala Ala Leu Gln Gly Lys		
1970	1975	1980
Glu Gln His Leu Leu Glu Gln Ala Glu Leu Ser Arg Ser Leu Glu		
1985	1990	1995
Ala Ser Thr Ala Thr Leu Gln Ala Ser Leu Asp Ala Cys Gln Ala		
2000	2005	2010
His Ser Arg Gln Leu Glu Glu Ala Leu Arg Ile Gln Glu Gly Glu		
2015	2020	2025
Ile Gln Asp Gln Asp Leu Arg Tyr Gln Glu Asp Val Gln Gln Leu		
2030	2035	2040
Gln Gln Ala Leu Ala Gln Arg Asp Glu Glu Leu Arg His Gln Gln		
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Glu Arg Glu Gln Leu Leu Glu Lys Ser Leu Ala Gln Arg Val Gln		
2060	2065	2070
Glu Asn Met Ile Gln Glu Lys Gln Asn Leu Gly Gln Glu Arg Glu		
2075	2080	2085
Glu Glu Glu Ile Arg Gly Leu His Gln Ser Val Arg Glu Leu Gln		
2090	2095	2100
Leu Thr Leu Ala Gln Lys Glu Gln Glu Ile Leu Glu Leu Arg Glu		
2105	2110	2115
Thr Gln Gln Arg Asn Asn Leu Glu Ala Leu Pro His Ser His Lys		
2120	2125	2130
Thr Ser Pro Met Glu Glu Gln Ser Leu Lys Leu Asp Ser Leu Glu		
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Pro Arg Leu Gln Arg Glu Leu Glu Arg Leu Gln Ala Ala Leu Arg		
2150	2155	2160
Gln Thr Glu Ala Arg Glu Ile Glu Trp Arg Glu Lys Ala Gln Asp		
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Leu Ala Leu Ser Leu Ala Gln Thr Lys Ala Ser Val Ser Ser Leu		
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Ser Glu Gln Gln Arg Leu Gln Asp Glu Leu Glu Leu Thr Arg Arg		
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Ala Leu Glu Lys Glu Arg Leu His Ser Pro Gly Ala Thr Ser Thr		
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Ala Glu Leu Gly Ser Arg Gly Glu Gln Gly Val Gln Leu Gly Glu		
2240	2245	2250
Val Ser Gly Val Glu Ala Glu Pro Ser Pro Asp Gly Met Glu Lys		
2255	2260	2265
Gln Ser Trp Arg Gln Arg Leu Glu His Leu Gln Gln Ala Val Ala		
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Arg Leu Glu Ile Asp Arg Ser Arg Leu Gln Arg His Asn Val Gln		
2285	2290	2295
Leu Arg Ser Thr Leu Glu Gln Val Glu Arg Glu Arg Arg Lys Leu		
2300	2305	2310
Lys Arg Glu Ala Met Arg Ala Ala Gln Ala Gly Ser Leu Glu Ile		
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Ser Lys Ala Thr Ala Ser Ser Pro Thr Gln Gln Asp Gly Arg Gly		
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Gln Lys Asn Ser Asp Ala Lys Cys Val Ala Glu Leu Gln Lys Glu		
2345	2350	2355
Val Val Leu Leu Gln Ala Gln Leu Thr Leu Glu Arg Lys Gln Lys		
2360	2365	2370
Gln Asp Tyr Ile Thr Arg Ser Ala Gln Thr Ser Arg Glu Leu Ala		
2375	2380	2385
Gly Leu His His Ser Leu Ser His Ser Leu Leu Ala Val Ala Gln		
2390	2395	2400

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Ala Pro Glu Ala Thr Val Leu Glu Ala Glu Thr Arg Arg Leu Asp
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 Gly Leu Leu Arg Gln Gly Asp Met Leu Arg Ala Phe His Ala Ala
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 Leu Arg Asn Ser Pro Val Asn Thr Lys Asn Gln Ala Val Lys Glu
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 Arg Ala Gln Gly Val Val Leu Lys Val Leu Thr Asn Phe Lys Ser
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 Ser Glu Ile Glu Gln Ala Val Gln Ser Leu Asp Arg Asn Gly Val
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